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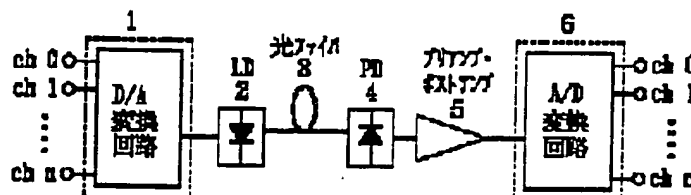
## PATENT ABSTRACTS OF JAPAN

(21) Application number: **06232291**(51) Intl. Cl.: **H04B 10/28 H04B 10/26 H04B 10/14 H04B 10/04 H04B 10/06 H04L 25/49**(22) Application date: **01.09.94**

(30) Priority:	(71) Applicant: <b>NIPPON TELEGR &amp; TELEPH CORP &lt;NTT&gt;</b>
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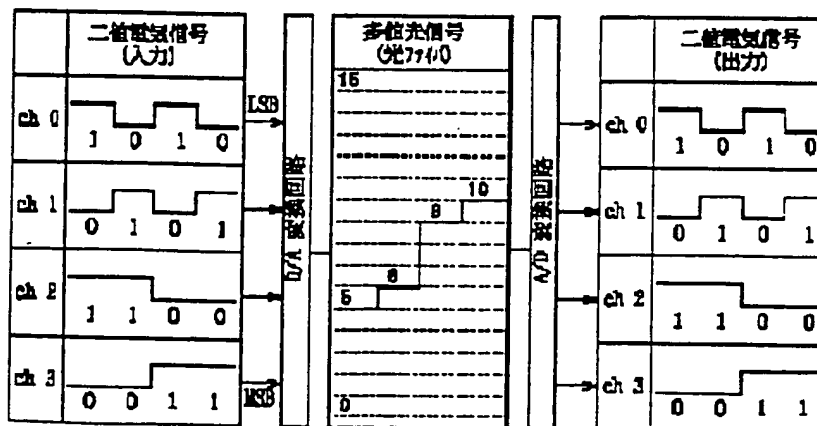
(54) **OPTICAL TRANSMISSION CIRCUIT, OPTICAL RECEPTION CIRCUIT, AND OPTICAL TRANSMISSION/RECEPTION CIRCUIT**

(57) Abstract:



**PURPOSE:** To perform communication with a low power consumption by converting plural inputted binary electric signals to optical signals and transmitting them through an optical fiber and converting a received multilevel optical signal to a binary electric signal.

**CONSTITUTION:** When digital signals are inputted to respective channels on the transmission side, they are converted into an analog multilevel optical signal shown in the central Fig., and this optical signal is transmitted to the reception side through an optical fiber 3. On the reception side, an A/D conversion circuit 6 performs A/D conversion to decode the digital signals



shown in the right Fig. Consequently, an LD drive circuit, a preamplifier circuit, a host-amplifier circuit, etc., are considerably simplified in comparison with those in the parallel transmission system, and the power consumption is reduced. Since it is unnecessary to increase the operation speed in this case, the power consumption is not increased and is more reduced; and the circuit is made multi-channel without considerable improvement of characteristics of devices constituting the circuit.

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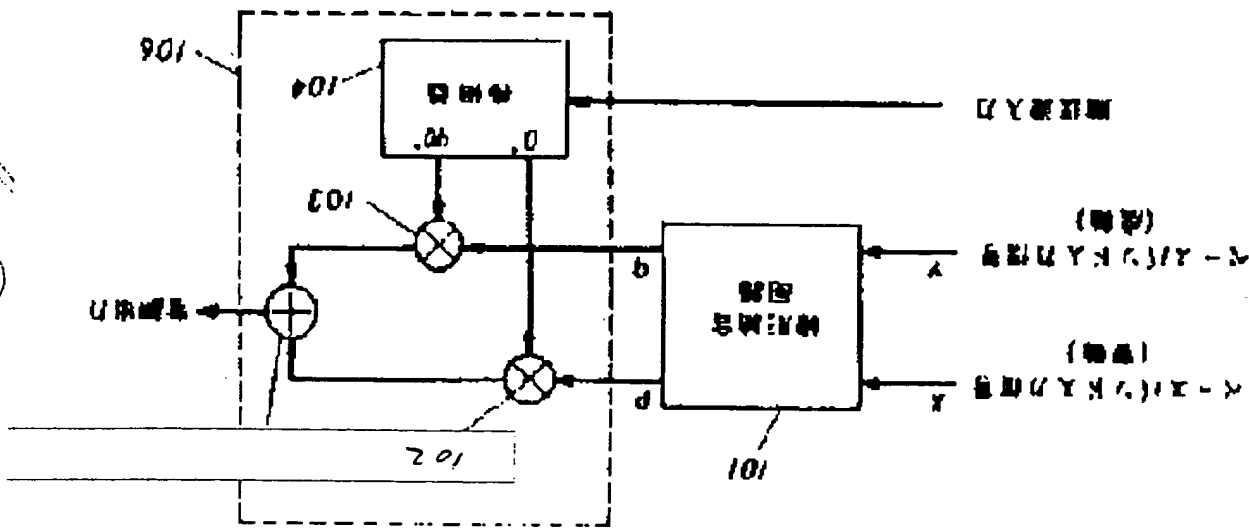
(54) QUADRATURE AMPLITUDE MODULATOR

(57) Abstract:

PURPOSE: To dispense with adjustment in a phase shifter in which a high frequency is handled by correcting a baseband input signal used as input to a quadrature amplitude modulator at a linearly coupled circuit to correct the phase error of the phase shifter in the quadrature amplitude modulator.

CONSTITUTION: Two baseband signals are linearly coupled appropriately at the linearly coupled circuit 101, and are inputted to the quadrature amplitude modulator 106, and are inputted to multipliers 102, 103 in the modulator. A carrier is changed to a pair of orthogonal carriers with phase difference of almost 90° by the phase shifter 104, and they are multiplied by the baseband signals at the multipliers 102, 103, and are synthesized at an adder 105, then, modulation output is issued.

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The only additional component to QAM is 101: linear couple circuit.

simult. with for a QAM can be put into ... it looks in Japan.